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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 09/854,539 | 05/14/2001 | Steven Towle | 884.415US1 | 8328 |
| 7590 | 12/17/2003 | | EXAMINER | |
| Schwegman, Lunberg, Woessner & Kluth, P.A. P.O. Box 2938 Minneapolis, MN 55402 | | | PERALTA, GINETTE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2814 | |

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/854,539 | TOWLE, STEVEN |
| | Examiner Ginette Peralta | Art Unit 2814 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 12 August 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-17 and 25-31 is/are pending in the application.

4a) Of the above claim(s) 4-6, 8-12, 17 and 25-31 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-3, 5 and 9-11 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) The translation of the foreign language provisional application has been received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9/03.

- 4) Interview Summary (PTO-413) Paper No(s) _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marrs et al. (U. S. Pat. 5,355,283) in view of Hoffman et al. (U. S. Pat. 5,055,532).

Regarding claim 1, Marrs et al. discloses in Fig. 5 a microelectronic device comprising a package core 502 having an opening therein; a microelectronic die 501 located within the opening of the package core 502; and an encapsulation material 503 within the opening of the package core to hold the microelectronic die within the package core 502, the encapsulation material including a polymeric resin more specifically a molding or potting resin such as epoxy (col. 8, ll. 30-35).

Marrs et al. disclosed the claimed invention with the exception of using a fiber reinforced encapsulation material.

Hoffman et al. discloses a modified polymeric resin that comprises a fiber reinforced laminate that can be used as a molding resin, wherein the polymeric resin is fiber reinforced for the disclosed intended purpose of providing a resin composition capable of exhibiting good mechanical properties, having high heat distortion

temperatures, and providing cured products exhibiting reduced shrinkage and improved surface appearance.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a fiber reinforced polymeric resin as the one taught by Hoffman et al. as the molding resin of Marrs et al. for the disclosed intended purpose of Hoffman et al. of providing an encapsulant capable of good mechanical properties, having high heat distortion temperatures, and providing cured products exhibiting reduced shrinkage and improved surface appearance.

Regarding claims 2 and 3, Hoffman et al. discloses that the fibrous filler material includes the particles being of a critical particle size of about 20 microns. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to depending on the use of the fiber reinforced resin to vary the length of the particles of individual fibers, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 5, Hoffman et al. discloses that the fibrous filler material includes carbon-containing fibers.

Regarding claims 9 and 10, Marrs et al. and Hoffman et al. disclose the polymeric resin including epoxy or a plastic.

Regarding claim 11, Marrs et al. discloses the structure further comprising a metallization layer 504 built up over the package core 502, the metallization layer being conductively coupled to bond pads 508 on a surface of the microelectronic die.

Response to Arguments

3. Applicant's arguments filed 8/12/03 have been fully considered but they are not persuasive.
4. With regards to applicant's argument that Marrs et al. does not disclose "using a fiber reinforced encapsulation material", and that the particle size in Hoffman is exclusively in reference to dispersed polymer particles and not with respect to any fibers, it is noted that precisely the polymer particles dispersed in the material are the fibers, it is noted that a fiber reinforced material is one that has fibers dispersed in the material, in this case the fibers are polymer fibers as taught by Hoffman et al.. With regards to applicant's argument that Hoffman et al. neither teaches nor suggests the application of the polymer modified resins to a microelectronic device, it is noted that Hoffman et al. teaches that the compositions are useful in a variety of high performance engineering thermoset applications in which good mechanical properties and high heat distortion temperatures are required, which are conditions met and usually presented in semiconductor devices.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (703) 305-7722. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9306 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

GP

My condolences to the family and friends of Mr. Steven Towle, may they find solace in their time of sadness.

Ginette Peralta

*for [unclear]
Wetzel [unclear] [unclear]
Supt. [unclear] [unclear]*